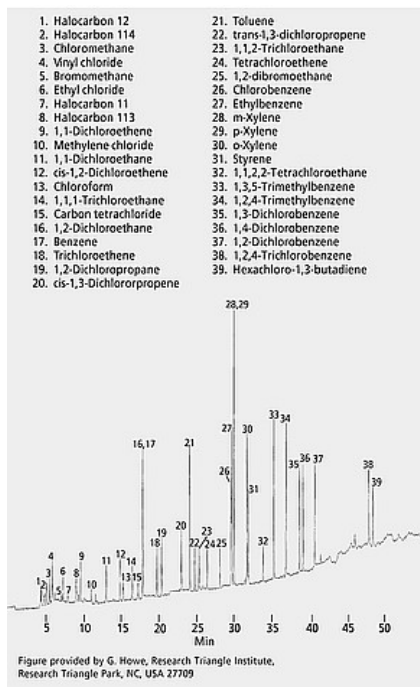


# US EPA Method TO-17: GC Analysis of Volatiles on VOCOL® after Collection/Desorption using Air Toxics Tube



## Conditions

sample/matrix	10-50 ng each analyte introduced onto tube (calibration standard, Cat. No. 41900)
adsorbent tube	Air Toxics (glass) (25086)
column	VOCOL, 60 m x 0.25 mm I.D., 1.5 µm film (24154)
oven	37 °C (4 min) to 200 °C at 4 °C/min, hold 10 min
carrier gas	helium, 2 mL/min
detector	FID

## Description




Categories	Analytical Chromatography, GC Applications, Air Monitoring Applications, Volatiles
Featured Industry	Environmental Industrial Hygiene
General description	<b>This is an application, not a product for sale.</b> See "Related Products" to find associated products for sale.
Legal Information	VOCOL is a registered trademark of Sigma-Aldrich Co. LLC
Other Notes	<b>Complementary products:</b> <a href="#">Syringes</a> <a href="#">Vials</a> <a href="#">Gas Purification and Gas Management</a> <a href="#">Inlet Liners, Glass Wool, and Specialized Hand Tools</a> <a href="#">Septa and Specialized Hand Tools</a> <a href="#">Column Ferrules, Nuts, and Specialized Hand Tools</a>
suitability	application for air monitoring, application for GC

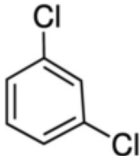
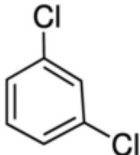










## Analyte






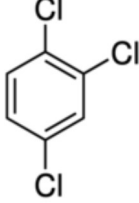



- 1,1,1-Trichloroethane
- 1,1,1,2-Tetrachloroethane
- 1,1,2-Trichloroethane
- 1,1,1-Dichloroethane
- 1,1-Dichloroethene
- 1,2,4-Trichlorobenzene
-

- 1,2,4-Trimethylbenzene
- 1,2-Dibromoethane
- 1,2-Dichlorobenzene
- 1,2-Dichloroethane
- 1,2-Dichloropropane
- 1,3,5-Trimethylbenzene
- 1,3-Dichlorobenzene
- 1,4-Dichlorobenzene
- Benzene
- Bromomethane
- Carbon tetrachloride
- Chlorobenzene
- Chloroform
- Chloromethane
- cis-1,2-Dichloroethene
- cis-1,3-Dichloropropene
- Ethyl chloride
- Ethylbenzene
- Halocarbon 113
- Halocarbon 114
- Halocarbon 114
- Halocarbon 12
- Hexachloro-1,3-butadiene
- Methylene chloride
- m-Xylene
- o-Xylene
- p-Xylene
- Styrene
- Tetrachloroethene
- Toluene
- trans-1,3-Dichloropropene
- Trichloroethene
- Vinyl chloride

## Materials

Product #	Image	Description
CRM48617		Benzene solution certified reference material, TraceCERT <sup>®</sup> , 200 µg/mL in methanol
02671	CCl <sub>4</sub>	Carbon tetrachloride analytical standard
48604		Carbon tetrachloride solution certified reference material, 200 µg/mL in methanol
08650		Chlorobenzene analytical standard
40006		Chlorobenzene solution certified reference material, 5000 µg/mL in methanol
02487	CHCl <sub>3</sub>	Chloroform analytical standard
48520-U	CHCl <sub>3</sub>	Chloroform analytical standard
295507	CH <sub>3</sub> Cl	Chloromethane ≥99.5%
339725	CH <sub>3</sub> Cl	Chloromethane solution 1.0 M in <i>tert</i> -butyl methyl ether, anhydrous
48622	CH <sub>3</sub> Cl	Chloromethane solution 200 µg/mL in methanol, analytical standard
31040	BrCH <sub>2</sub> CH <sub>2</sub> Br	1,2-Dibromoethane PESTANAL <sup>®</sup> , analytical standard
48880-U	BrCH <sub>2</sub> CH <sub>2</sub> Br	1,2-Dibromoethane solution certified reference material, 200 µg/mL in methanol
36707		1,2-Dichlorobenzene PESTANAL <sup>®</sup> , analytical standard
48639		1,2-Dichlorobenzene solution certified reference material, 200 µg/mL in methanol

Product #	Image	Description
113808		1,3-Dichlorobenzene 98%
40214		1,3-Dichlorobenzene solution certified reference material, 5000 µg/mL in methanol
35775		1,4-Dichlorobenzene PESTANAL <sup>®</sup> , analytical standard
40025		1,4-Dichlorobenzene solution certified reference material, 5000 µg/mL in methanol
36967	CH <sub>3</sub> CHCl <sub>2</sub>	1,1-Dichloroethane analytical standard
48512	CH <sub>3</sub> CHCl <sub>2</sub>	1,1-Dichloroethane analytical standard
40012		1,1-Dichloroethane solution certified reference material, 5000 µg/mL in methanol
02562	ClCH <sub>2</sub> CH <sub>2</sub> Cl	1,2-Dichloroethane analytical standard
48613		1,2-Dichloroethane solution certified reference material, 200 µg/mL in methanol
40027		1,1-Dichloroethene solution certified reference material, 1000 µg/mL in methanol
48597		<i>cis</i> -1,2-Dichloroethene analytical standard
48836		<i>cis</i> -1,2-Dichloroethene solution certified reference material, 2000 µg/mL in methanol
02574	H <sub>2</sub> C=CCl <sub>2</sub>	1,1-Dichloroethylene analytical standard
02575	CH <sub>2</sub> Cl <sub>2</sub>	Dichloromethane analytical standard
48600	CH <sub>2</sub> Cl <sub>2</sub>	Dichloromethane solution certified reference material, 200 µg/mL in methanol
82270		1,2-Dichloropropane 99%
02577		1,2-Dichloropropane analytical standard
47368-U		<i>cis</i> -1,3-Dichloropropene solution 2000 µg/mL in methanol, analytical standard
47793		<i>trans</i> -1,3-Dichloropropene analytical standard
47369		<i>trans</i> -1,3-Dichloropropene solution certified reference material, 2000 µg/mL in methanol
03079		Ethylbenzene analytical standard
487104		Ethylbenzene solution NMR reference standard, 0.1% in chloroform-d (99.8 atom % D), TMS 0.01 %, NMR tube size 5 mm × 8 in.
40036		Ethylbenzene solution certified reference material, 5000 µg/mL in methanol
40050-U		Hexachlorobutadiene solution certified reference material, 5000 µg/mL in methanol
48543		Hexachloro-1,3-butadiene analytical standard
63908		Mesitylene analytical standard

Product #	Image	Description
61927		Mesitylene certified reference material, <i>TraceCERT</i> <sup>®</sup>
PHR1557	CH <sub>2</sub> Cl <sub>2</sub>	Methylene Chloride Pharmaceutical Secondary Standard; Certified Reference Material
PHR1316	CHCl <sub>3</sub>	Residual Solvent - Chloroform Pharmaceutical Secondary Standard; Certified Reference Material
1601204		Residual Solvent Class 1 - 1,1-Dichloroethene United States Pharmacopeia (USP) Reference Standard
PHR1319		Residual Solvent - Trichloroethylene Pharmaceutical Secondary Standard; Certified Reference Material
45993		Styrene analytical standard
47745-U		Styrene analytical standard
48347		Styrene solution certified reference material, 200 µg/mL in methanol
185434	Cl <sub>2</sub> CHCHCl <sub>2</sub>	1,1,2,2-Tetrachloroethane reagent grade, ≥98.0%
46259	Cl <sub>2</sub> CHCHCl <sub>2</sub>	1,1,2,2-Tetrachloroethane analytical standard
36627		1,2,4-Trichlorobenzene PESTANAL <sup>®</sup> , analytical standard
40007		1,2,4-Trichlorobenzene solution certified reference material, 5000 µg/mL in methanol
466212	ClCH <sub>2</sub> CHCl <sub>2</sub>	1,1,2-Trichloroethane contains ≤3% 2-propanol as stabilizer, 97%
46262	ClCH <sub>2</sub> CHCl <sub>2</sub>	1,1,2-Trichloroethane analytical standard
40013		1,1,2-Trichloroethane solution certified reference material, 5000 µg/mL in methanol
46267		Trichloroethylene analytical standard
40085		Trichloroethylene solution certified reference material, 5000 µg/mL in methanol
45996		1,2,4-Trimethylbenzene analytical standard
47324		1,2,4-Trimethylbenzene analytical standard
41103		1,3,5-Trimethylbenzene solution certified reference material, 5000 µg/mL in methanol
744484	H <sub>2</sub> C=CHCl	Vinyl chloride ≥99.95%
48625		Vinyl chloride solution 200 µg/mL in methanol, analytical standard
500976		Vinyl chloride solution certified reference material, 2000 µg/mL in methanol
24154		VOCOL <sup>®</sup> Capillary GC Column L × I.D. 60 m × 0.25 mm, d <sub>f</sub> 1.50 µm
40201		<i>o</i> -Xylene solution certified reference material, 5000 µg/mL in methanol
40202		<i>m</i> -Xylene solution certified reference material, 5000 µg/mL in methanol
40203		<i>p</i> -Xylene solution certified reference material, 5000 µg/mL in methanol